

Study of gastric outlet obstruction in Al-gamhuria Teaching Hospital- Aden (January 2004-December 2013)

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Abstract

Gastric outlet obstruction implies a complete or incomplete obstruction of the distal stomach, pylorus or proximal duodenum. This retrospective study was carried out in Al-gamhuria Modern General Hospital, Aden, between January 2004 and December 2013, to highlight the etiological spectrum, diagnostic tools, management and outcome. Males are more often affected, with a male to female ratio 4.1:1. The mean age was 42.38 ± 13.71 , years while in children the mean age was 2.11 ± 2.83 months. The most common clinical presentation was non-bilious vomiting-56 (100%). The etiology was benign in majority [52 (92.9%)] and gastric cancer was the only malignant etiology [4 (7.1%)]. Hypertrophic pyloric stenosis [35 (62.5%)] was the commonest etiology in children, while peptic ulcer disease was 7 (12.5%) in adult. Abdominal ultrasound [42 (75%)] and upper gastrointestinal endoscopy [11 (19.6%)] was the common diagnostic procedures. The common surgical procedures performed were pyloromyotomy 35 (67.3%) , gastrojejunostomy and pyloroplasty each of them had the same frequency 6 (11.5%). The mortality rate was 3 (5.3%). In conclusion, gastric outlet obstruction is still remaining a surgical problem in our situation, since determining the underlying pathology needs early appropriate imaging studies and timely surgical intervention to avoid mortality.

Key words: Gastric outlet obstruction, Etiology, Management.

Introduction

Gastric outlet obstruction (GOO) is not a single entity; it is the clinical and pathophysiological consequence of any disease process that produces a mechanical impediment to gastric emptying⁽²¹⁾, either by complete or incomplete obstruction of the distal stomach, pylorus or proximal duodenum. This obstruction may occur by a mass lesion, external compression, or from acute edema, chronic scarring and fibrosis or a combination of both.⁽¹⁷⁾

GOO is caused by a heterogeneous group of diseases that include both benign and malignant conditions.^(13, 17) The incidence of GOO has been reported to be less than 5% in patients with peptic ulcer disease, which is the leading benign cause of the problem, whereas the incidence of GOO in patients with gastric and peripancreatic malignancy, the most common malignant etiology has been reported as 15 – 20%.^(5, 19, 21)

GOO in children is a commonly encountered entity primarily caused by idiopathic hypertrophic pyloric stenosis (HPS) in infants, other causes are rare and, therefore, often difficult to diagnose.⁽¹⁶⁾ .The incidence of GOO in children is approximately 2 – 5 per 1,000⁽¹⁶⁾, but relatively rare (incidence 1: 100,000) when infantile HPS is excluded⁽¹⁵⁾ and the exact incidence of GOO in older child was not well-established.^(6, 18)

The diagnosis of GOO per se is not a problem, the difficulty lies in determining the pathology⁽¹³⁾, so the correct diagnosis can be achieved by combining clinical presentation with appropriate imaging, leading to optimal and timely patient management.⁽¹⁶⁾

The author could not find any officially reported published data, and in our hospital no published clinical study has been found to analyze this problem, so this study was conducted to highlight the etiological spectrum, diagnostic tools, management and outcome of GOO in our hospital.

Patients and Methods

This is a retrospective study done at Al-gamhuria Modern General Hospital- Aden, between January 2004 and December 2013. By review of patients medical records during this period, all patients having clinical presentation and documented upper gastrointestinal endoscopy or radiological evidence (plain abdominal X-ray, barium studies, abdominal ultrasound, computerized tomography scan) of GOO were included in this study, all patients with clinical presentation of GOO and who didn't do upper gastrointestinal endoscopy or any radiological studies, but with positive intraoperative finding at exploratory laparotomy, were also included in this study. Patients not consistent with the above mentioned findings were excluded from this study. Accordingly, 60 patients medical records were reviewed; 56 were included in this study, while 4 were excluded.

Data from patient's medical record including variables, age, sex, clinical presentation, diagnostic procedure, surgical procedure and outcome were collected; the collected data were analyzed and processed by using SPSS version 17 software (SPSS, Chicago, IL, USA).

Results

Between January 2004 and December 2013, a total 56 patients with GOO were retrospectively reviewed. Out of these 56 patients, 45 were males (80.4%) and 11 were females (19.6%). Males are more often affected, with an average male to female ratio of 4.1:1. (See figure 1).

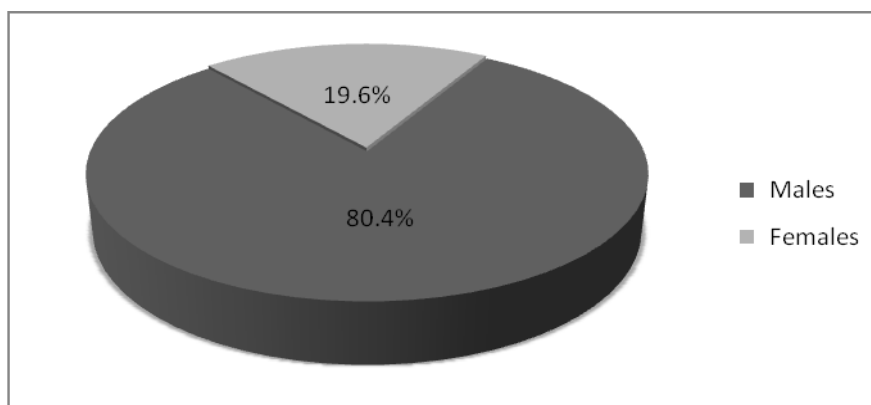


Figure 1: Distribution by gender

In children, the mean age was 2.11 ± 2.83 months, (range: 1 month – 15 years) while in adults the mean age was 42.38 ± 13.71 years, (range: 20 years – 70 years). The age group ≤ 10 years were the most frequently affected 42 (75%), followed by 41 – 50 years age group which form 6 patients (10.7%). (See table 1).

Table 1: Age distribution

Age group	N (%)
≤ 10 year	* 42 (75%)
11 – 20 year	2 (3.6%)
21 – 30 year	2 (3.6%)
31 – 40 year	2 (3.6%)
41 – 50 year	6 (10.7%)
51 – 60 year	1 (1.8%)
61 – 70 year	1 (1.8%)
Total	56 (100%)
* 38(90.5%) of them < 2 months	

The etiology was benign in the majority of patients [52 (92.9%)], with the most common etiologies HPS in 35 patients (62.5%), and peptic ulcer in 7 patients (12.5%). Malignant etiology was found in 4patients (7.1%) as gastric cancer. (See table 2).

Table 2 : Etiology distribution

Etiologies	N (%)
Hypertrophic pyloric stenosis	35 (62.5%)
Peptic ulcer	7 (12.5%)
Gastric cancer	4 (7.1%)
Pyloric duodenal stenosis	3 (5.3%)
Ladd bands	2 (3.6%)
Pyloric duodenal stricture	2 (3.6%)
Prepyloric web	1 (1.8%)
Gastroduodenal Tuberculosis	1 (1.8%)
Duodenal atresia	1 (1.8%)
Total	56 (100%)

The most common presentation was non-bilious vomiting in all the 56 patients (100%). Forty eight of the affected patients (85.7%) were initially seen with dehydration and 27 patients (48.2%) were with weight loss. (See figure 2).

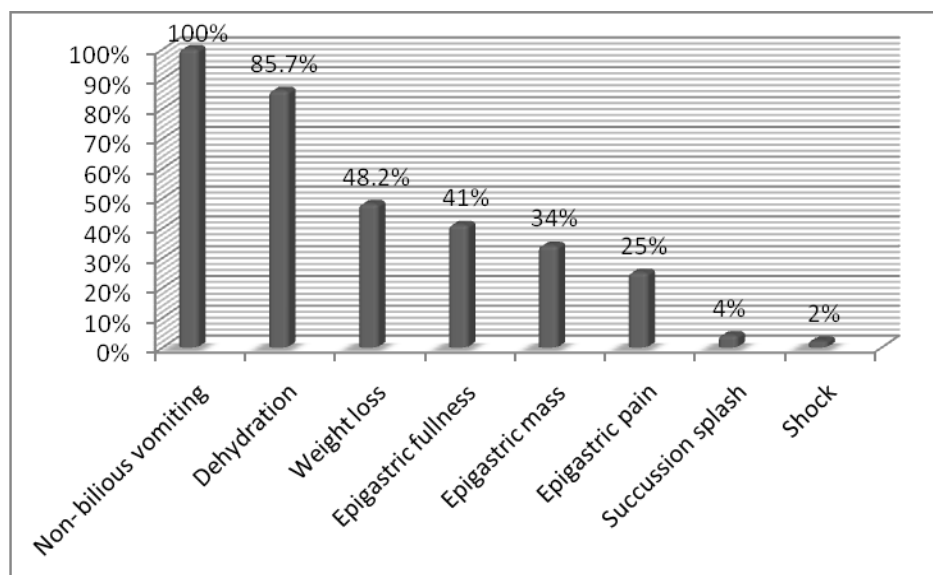


Figure 2: Distribution by clinical presentation

The diagnosis was made by abdominal ultrasound in 42 (75%), upper endoscopy and biopsy in 11 (19.6%) and barium studies in 9 (16.1%) of affected patients. (See table 3).

Table 3 : Diagnostic studies distribution

Diagnostic procedure	N (%)
Abdominal ultrasound	42 (75%)
Upper endoscopy and biopsy	11 (19.6%)
Barium study	9 (16.1%)
Plain abdominal x – ray	1 (1.8%)
Abdominal CT – Scan	1 (1.8%)
Not done	1 (1.8%)

Out of 56 patients, 52 (92.9%) underwent surgery, two of them were treated conservatively and the other two died before operation. Out of the 52 patients, 35 (67.3%) underwent pyloromyotomy, 6 (11.5%) underwent gastrojejunostomy, 6 (11.5%) underwent pyloroplasty and 5 (9.6%)

underwent truncal vagotomy combined with gastrojejunostomy. (See Table 4). The mortality rate was 3 (5.3%) for all patients.

Table 4 : Surgical procedure distribution (n = 52)

Operative procedure	N (%)
Pyloromyotomy (Ramstedt's operation)	35 (67.3%)
Gastrojejunostomy	6 (11.5%)
Pyloroplasty (Heineke-Mikulicz)	6 (11.5%)
Truncal vagotomy and Gastrojejunostomy	5 (9.6%)
Total	52 (100%)

Discussion

GOO encompasses a broad spectrum of conditions that prevent the passage of gastric contents into the duodenum. ⁽¹⁴⁾ To the best of our knowledge, the problem was not previously studied at our hospital, so this study was an attempt to describe our own experience in dealing with this disease.

In our study, males are more often affected, with a male to female ratio 4.1:1. The mean age was 42.38 ± 13.71 years with a range (20 years – 70 Years), the highest proportion of patients was in their fourth decade; while, in children, the mean age was 2.11 ± 2.83 months, (range 1 month – 15 years). This is in consistent with most reports from Africa and Asia. ^(10, 11, 13, 17)

Considering the clinical presentations are not different from those in other studies ^(2, 10, 13, 21), with non – bilious vomiting in all patients 56 (100%), and dehydration with weight loss were the presenting symptoms to seek medical help.

The majority of our patients was benign 52 (92.9%) and the malignant etiology was only the gastric cancer [4 (7.1%)]. Our results are in contrast to the reported etiologies in the western countries ⁽¹⁷⁾, but are similar to other studies in Ethiopia. ⁽¹³⁾

HPS 35 (62.5%) was the commonest etiology in children, typically patients were male and less than two month, This is in consistent with different studies ^(10, 16, 22), all of them were diagnose by abdominal ultrasound which is mentioned currently as the preferred imaging modality because of the absence of ionizing radiation and have sensitivity and specificity of greater than 95% in diagnosis ⁽⁹⁾. All of them underwent surgical pyloromyotomy (Ramstedt's operation), one developed burst abdomen, later reoperated for repair.

GOO, secondary to peptic ulcer disease, remain a common problem in adults ⁽³⁾ but it rarely occurs in childhood ⁽²³⁾, according to our study, peptic ulcer disease was the second common etiology of GOO 7 (12.5%) among our patients, ulcers within the pyloric channel and first portion of the duodenum were responsible for GOO, which were demonstrated by upper endoscopy and/ or barium upper gastrointestinal studies. Out of these 7 patients, 5 underwent truncal vagotomy and gastrojejunostomy and 2 patients were improved with the medical treatment at that time of admission.

Malignant GOO is commonly seen in patients with advanced malignancy and was a preterminal event ⁽¹⁾. In our study, gastric cancer was the only malignant cause in 4 patients (7.1%), all of them were males, diagnosed by upper endoscopy and biopsy and barium upper gastrointestinal studies, one of them died while he was prepared for operation with 14 days hospital stay.

Gastrojejunostomy, which is usually the surgical palliative bypass procedure, was performed for 3 patients; more recently endoscopic placement of expandable metal stents (SEMS) has been used as a non surgical palliative option and has become a routine practice ⁽⁸⁾. Unfortunately, this facility is not yet available in our hospital.

It is documented that other causes are rare and often difficult to diagnose, but they are important to keep in mind when evaluating a patient with clinical symptoms suggesting GOO ⁽⁶⁾. In our study Ladd bands was found in 2 patients (3.6%) with suggestive abdominal ultrasound results, and the diagnosis was confirmed by exploratory laparotomy, and pyloroplasty performed for them.

Regarding patient with prepyloric, web was with Down's dysmorphic features and documented cardiovascular anomalies, it is well known that Down's syndrome associated with cardiovascular and gastrointestinal system malformation⁽⁴⁾, unfortunately patient died before operation and within less than 24 hours of admission, abdominal ultrasound in this patient exclude HPS, but cannot ruled out gastrointestinal tract webs, although ultrasound might show the web and the related gastric outlet anatomy if facilitated by adjacent fluid and gas⁽¹⁶⁾; and the diagnosis can be made also by barium meal study or upper endoscopy.

Duodenal atresia was found in one patient who was a preterm newborn; no radiological studies were done, diagnosis were made by exploratory laparotomy, and gastrojejunostomy was done but unfortunately one patient who also had multiple intestinal atresia died two days post – operation.

Three patients were diagnosed by upper endoscopy and / or barium meal as pyloric duodenal narrowing. At operation, there was adhesion which was released and pyloroplasty (Heineke-Mikulicz) was performed.

Among our patients, 2 were exposed accidentally to corrosive ingestion and were diagnose by barium studies and upper endoscopy. It is reported that the majority of these strictures require surgery⁽¹²⁾, and the type of surgery depends mostly on the findings of the surgeon at laparotomy.⁽²⁰⁾ So, pyloroplasty was done in one and gastrojejunostomy in the other.

It is mentioned that gastroduodenal tuberculosis is rare and pyloric stenosis resulting from tuberculosis is even rarer. The diagnosis should be considered in patients who come from areas where the disease is endemic⁽⁷⁾. Our patient came from Somalia, and barium meal and upper endoscopic results were not so helpful in diagnosis. The disease was confirmed post - operatively through histopathological findings of caseous necrosis and langhans type giant cell. Gastrojejunostomy was performed and anti- tuberculous drugs were prescribed; this is similar with most reported cases from India and Africa.^(10, 13, 17)

In agreement with other studies^(10, 13, 21), the diagnosis of GOO in this study was based on clinical presentations and diagnostic procedures; and was confirmed by intra-operative findings and histology. The treatment depends on the underlying pathology, which was usually surgical. The mortality rate was 3 (5.3%) for all patients.

In conclusion, GOO still remains a surgical problem in our situation and is more common among males, majority of them with benign etiology, abdominal ultrasound, upper gastrointestinal endoscopy, upper gastrointestinal barium study were the used diagnostic procedures.

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دراسة انسداد مخرج المعدة في مستشفى الجمهورية التعليمي – عدن في الفترة من

يناير 2004 حتى ديسمبر 2013 م

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الملخص

انسداد مخرج المعدة هو انسداد تام أو جزئي لمخرج المعدة، البواب أو الجزء الأول من الأنتى عشر. هذه دراسة خلفية تمت في مستشفى الجمهورية النموذجي العام - عدن في الفترة من يناير 2004 حتى ديسمبر 2013 م بهدف تسليط الضوء على أسباب انسداد مخرج المعدة وأدوات وطرق التشخيص والعلاج وحصيلة ذلك.

الذكور هم أكثر إصابة من الإناث بنسبة 4.1-1 في متوسط عمر 42.38 ± 13.71 سنة في حين كان الأطفال في سن متوسط 2.11 ± 2.83 شهراً. إن القي غير الصفراوي كان العرض السريري الرئيسي في جميع الحالات 56 (100%). تعد المسببات الحميدة هي الغالبة بمعدل 92.9% (52 حالة)، و كان سرطان المعدة الخبيث المسبب الوحيد في 4 من الحالات فقط (7.1%)، في حين أن تضيق البواب الضخامي 35 حالة (62.5%)، هو السبب الأكثر شيوعاً في الأطفال يليه القرحة المعدية العفجية 7 حالات (12.5%) عند الكبار. لقد كانت الموجات فوق الصوتية للبطن هي أداة التشخيص لانسداد مخرج المعدة في 42 من الحالات (75%) في حين أن التنظير الهضمي العلوي في 11 حالة (19.6%)، في الوقت التي كانت العملية الجراحية الأكثر شيوعاً هي إجراء شق المصلي العضلي من غار المعدة 35 (67.3%)، المفاغرة المعدية المعوية وإجراء توسيع البواب و لكل واحد منهم كان نفس التردد 6 (11.5%). وكانت عدد الوفيات 3 (5.3%) نستنتج من هذا أن انسداد مخرج المعدة مازالت مشكلة جراحية لان معرفة الأسباب يتطلب وسائل تصويرية حديثة ومبكرة مما يسمح بالتشخيص المبكر والتدخل الجراحي المناسب والسريع لتجنب حدوث الوفيات.

الكلمات المفتاحية: انسداد مخرج المعدة، أسباب انسداد مخرج المعدة، علاج انسداد مخرج المعدة .